In the Claims

Applicants have submitted a new complete claim set below.

Please cancel claims 1-7 and 36-60 without prejudice or disclaimer.

1-7. (Cancelled)

8. (Original) A polymer electrolyte comprising:

a non-crosslinked association of a plurality of block copolymer chains each including at least one ionically-conductive block and at least one second block immiscible with the ionically-conductive block;

the association amorphous and non-glassy through the entire range of at least from about 0°C to about 70°C; and

the chains arranged in an ordered nanostructure including a continuous matrix of amorphous domains defined by association of ionically-conductive blocks providing continuous ionically-conductive pathways, and amorphous second domains, immiscible with the ionically-conductive domains, defined by association of second blocks.

9. (Original) A polymer electrolyte as in claim 8, wherein the ordered nanostructure is formed upon reduction of temperature of a disordered melt.

10. (Original) A polymer electrolyte as in claim 8, wherein the ordered nanostructure is formed from a solution upon evaporation.

11. (Original) A polymer electrolyte as in claim 8, wherein the ordered nanostructure is formed from a solution upon precipitation.

12. (Original) A polymer electrolyte as in claim 8, wherein the ionically-conductive blocks form continuous, ionically-conducting domains when doped with an appropriate salt.

13. (Original) A polymer electrolyte as in claim 8, wherein the electrolyte is free of crosslinking, crystallization or glassification and the ordered nanostructure exhibits global dimensional stability and chain mobility providing high ionic conductivity.

14. (Original) A polymer electrolyte as in claim 13, wherein interblock, non-covalent chemical attractions create associations between the chains that allows for chain mobility providing high ionic conductivity while maintaining dimensional stability.

15. (Original) A polymer electrolyte as in claim 8, wherein the molecular weight of the block copolymer chains of the ionically-conductive polymer is at least about 10,000 Daltons.

16. (Original) A polymer electrolyte as in claim 15, wherein the molecular weight of the block copolymer chains of the ionically-conductive polymer is at least about 25,000 Daltons.

17. (Original) A polymer electrolyte as in claim 16, wherein the molecular weight of the block copolymer chains of the ionically-conductive polymer is at least about 50,000 Daltons.

18. (Original) A polymer electrolyte as in claim 17, wherein the molecular weight of the block copolymer chains of the ionically-conductive polymer is at least about 100,000 Daltons.

19. (Original) A polymer electrolyte as in claim 8, wherein the second block is ionically-conductive.

20. (Original) A polymer electrolyte as in claim 8, the second block including non-ionically-conductive acrylates selected from the group consisting of polydecyl methacrylate, polylauryl methacrylate, wherein decyl and lauryl can be replaced with moieties having a number of carbon atoms high enough that the glass transition temperature of the block is less than service temperature, and selected such that crystallization does not occur, polyalkyl acrylates, polydimethyl siloxane, polybutadiene, polyisoprene, and saturated polymers or copolymers derived from polybutadiene and polyisoprene such as polyethylethylene and

polyethylenepropylene and copolymers thereof, and modified polystyrenes with flexible side chains of alkyl fluorocarbon and siloxane side chains attached through the phenyl group.

21. (Original) A polymer electrolyte as in claim 8, wherein the association of block copolymer chains is amorphous and non-glassy within a temperature range of at least from about -40°C to about 70°C.

22. (Original) A polymer electrolyte as in claim 8, wherein the second block has a Tg of less than about 0°C.

23. (Original) A polymer electrolyte as in claim 22, wherein the second block has a Tg of less than about -25°C.

24. (Original) A polymer electrolyte as in claim 23, wherein the second block has a Tg of less than about -40°C.

25. (Original) A polymer electrolyte as in claim 8, wherein the second block is electronically-non-conductive.

26. (Original) A polymer electrolyte as in claim 8, wherein the ionically conductive block is selected from the group consisting of methoxy polyethylene glycol methacrylate, methoxy polyethylene glycol acrylate, and other acrylate and methacrylate polymers modified to include short polyethylene oxide and polyethylene glycol side chains, polybutadiene or polyisoprene modified so as to include polyethylene oxide or polyethylene glycol side chains of length less than about 20 oxide units, polystyrene similarly modified through the phenyl group to include polyethylene oxide or polyethylene glycol side groups.

27. (Original) A polymer electrolyte as in claim 8, wherein the ionically-conductive domain incorporates an auxiliary ionic conductor.

28. (Original) A polymer electrolyte as in claim 27, wherein the auxiliary ionic conductor is polyethylene glycol dimethyl ether.

29. (Original) A polymer electrolyte as in claim 8, wherein the domains defined by association of ionically-conductive blocks define continuous ionic pathways due either to defects in the association, or inherent micro-phase separation.

30. (Original) A polymer electrolyte as in claim 8, doped with a lithium salt.

31. (Original) A polymer electrolyte as in claim 8, constructed and arranged as an electrolyte in a battery.

32. (Original) A polymer electrolyte as in claim 31, constructed and arranged as an electrolyte in an ionic solid state battery.

33. (Original) A polymer electrolyte as in claim 31, constructed and arranged as an electrolyte in a lithium solid battery.

34. (Original) A polymer electrolyte as in claim 8, wherein the block copolymer is a diblock copolymer.

35. (Original) A polymer electrolyte as in claim 8, wherein the block copolymer is a triblock copolymer.

36-60. (Cancelled)